Technology

It is introduced to us at an early age...

We use it almost daily …

And sometimes,

all day, every day...

When we are alone....

Or with friends.....

But...How is this affecting us?

The Effects of Technology

Artificial Intelligence- The Dark Side

A Seminar by: Dr. Tim Perry

Artificial Intelligence : Is It Replacing Human Relationships

(Photo by Texas State University)

Artificial Intelligence (AI)

- What is Artificial Intelligence?

It is a scientific field that focuses on **enabling computers, robots, and machines to perform tasks that typically require human intelligence, such as learning, reasoning, and problem-solving**. It is human designed systems that replicate the human intelligence capability. AI research began in the 1950s and was used in the 1960s by the U.S. Department of Defense when it trained computers to mimic human reasoning. In 1956, John McCarthy (MIT) first coined the term "Artificial Intelligence" as a topic of the Dartmouth Conference. Allen Newell, J.C. Shaw, and Herbert Simon of the RAND Corporation and Carnegie Institute of Technology (now Carnegie Mellon University) unveiled the first demonstration of an AI program called the Logic Theorist (LT) at this conference that same year. (Stryker, et. al, 8/9/24; Glover, 12/3/24)

What is Artificial Intelligence by definition ?

- Oxford Learner's Dictionaries define Artificial as something that is "not real" (Oxford Dictionary)
- It is something created but not organic in nature.
- In 2026, Artificial Intelligence is being described to children as a "**Smart Helper**" ,however, the most important thing to remember about this technology as being artificial is:
- **It is a Tool:** It does not have a real brain or feelings like love or mercy; it only knows patterns.
- **It Can Be Wrong:** Because it learns from examples, if those examples are confusing or incorrect, the AI can make mistakes.

(Chitti Blog. 1//6/25; Watson, 10/27/24)

Who uses Artificial Intelligence?

- You may or may not be aware of how pervasive AI is in our everyday lives already. According to one survey of 6,000 consumers, while only 33% of people think that they use AI, almost 80% use an AI-powered service or device. It's not surprising that people are unaware of all the ways AI touches their lives. (Investopedia, 4/10/25; Tableue, {Salesforce})

Types of ways you use AI:

- Digital Assistants
- Search engines
- Social media
- Online shopping
- Online banking
- Health care (medical, mental health, pharmacy)
- I-Phones
- On-line games
- Transportation
- Insurance claims and adjustments.

Benefits of AI Technology

- **Education**
  - Personalized learning
  - Adaptive and engaging learning systems
  - Intelligent Tutoring Systems (ITS)
  - Auto grading and feedback
  - Enhanced accessibility to learning resources- broader research ability
  - Support for special needs students
  - Predictive analysis
  - In school- emotional support platforms

- **Medicine**
  - Enhanced diagnostic accuracy
  - Faster drug discovery
  - More enhanced, accurate, and less evasive surgery
  - Better personalized holistic treatment plans (aids to help older adults with medication management, etc.)
  - Streamline administrative and documentation processes, making health care and mental health more efficient.

- **Industry**
  - Improved efficiency
  - Better quality control, training platforms, and claims processing.
  - Significant cost reduction- lower human workforce, higher production rates, and faster order processing
  - Better Customer support and digital assistance
  - Better advertising and consumer data algorithms
  - Safer handling of high-risk situations for military and law enforcement.
  - Improved investigative process for law enforcement, justice systems, and insurance systems.

But What About Social Development

- What are the risks, dangers, concerns as AI expands into the **social connections with humans**, and what will this look like in the future?

SCIENCE FICTION IS NOW SCIENCE FACTS

"Danger Will Robinson, Danger…" (Robot B-9, Lost in Space television series Sept. 15, 1965)

Our Brain

- Babies enter the world not knowing their caregiver exits. They discover their existence by way of their senses that determines the reality of their mother's true presence. This begins with their ability to see, hear and touch. They discover their own existence also by exploration using their senses.

Our Brain

- So both the EYES and EARS provide us with millions/billions of pieces of data that our Brain uses to interpret, and process based of experiences, and learned associations. So some sights are pleasant, and others are not; some sounds are pleasant, and others are not. Our responses to this stimuli is based on this interpretation of data and our understanding of the meaning of those sounds/words, and what our eyes are seeing to give context, etc. (PANG, 9/2/223)

Our Brain

- Babies can interpret facial expressions, with research indicating that even newborns can discriminate between different emotions. By around 5 months, babies can match facial expressions with corresponding vocal expression to determine emotional states. This is known as:
- ***Social Referencing***:
  - Infants learn to "read" their parents' expressions to understand events, feelings, and emotions. (Vaillant-Molina, et al. 3/25/13)

Forming Relationships

- We learn as infants about how relationships are formed through our interactions with our caregivers. (Familiar Relationship) We interpret information based on facial and vocal reactions as good, bad, accepting, unacceptable, pleasurable, unpleasant, threatening, or comforting, etc. These learned social interactions are stored in our brain for later interpretation of new relationships. As we get older, peer response and social norms play a more important role in relationship building.

Forming Relationships

- Recognizing facial expressions is crucial for infant-caregiver interaction, attachment, ***connection***, emotion regulation, and the development of later socio-emotional skills. (Photo by Dreamscape)

Brain Development, Cont.

- "because their brains are still developing and malleable, frequent exposure by so-called digital natives to technology is actually wiring the brain in ways very different than in previous generations. What is clear is that, as with advances throughout history, the technology that is available determines how our brain develops"

(Jim Taylor, Psychology Today 12/4/12)

Conscious vs Subconscious

- While our brain is very complex and can process billions of pieces of data in seconds, it can be "fooled" at any age, but it is especially vulnerable for children and young adults whose brain is not fully developed.
- For example: While we might be consciously aware that a chatbot is not human, our subconscious mind may still react to the AI's responses as if they were from a human, leading to a sense of connection or even emotional attachment. (Tejada, 2/23)

"The three critical factors for healthy physical and psychological child development are movement, touch, and *connection to other humans*."
(Rowan, 2013)

How is this important in AI building relationships

- **AI generated programs use the knowledge of how the brain works in forming relationships to program and design AI generative companions or interactive images to be more human like**. Therefore, more receptive in the forming of relationships with human counterparts, playing on how the brain receives and interprets stimuli that is desirable for a bonding and connective relationship. (CBS 60 Minutes Interview 1/13/19)

Generative AI

- GAI is a type of artificial intelligence **designed to create new, original content, such as text, images, music, or code, by learning patterns from vast amounts of existing data.** Unlike traditional AI, which might analyze or categorize data, generative AI produces outputs that ***resemble human-created work*** based on patterns and structures it has learned. Users interact with these models by providing a description, called a "prompt," which the AI uses to generate a relevant and often creative response. This is the type of AI used for interactive companion model design. (IBM Research, 2023)

AI-Relationship formation

- Human beings are inherently social creatures. This truth was written about by the ancient Greek philosopher Aristotle (384–322 BC). ***We are genetically hardwired for social interactions and our brain goes into overdrive to recognize instances of social threats and engagements, which can activate specialized reward circuits in the brain that help us bond*** *(Young, 2008; Pang, 5/14/23.)* Our subconscious minds are constantly on the lookout for cues about interpersonal connections. This hypervigilance means that we are inherently biased towards seeing social interactions everywhere, even when none exist. **A key to interpersonal interactions is the *ability to read facial expressions, which is why our brain is wired to recognize faces* and often believe to see them even in random objects** (this is called *face pareidolia*). Just as with faces, recognizing social dynamics is largely innate and effortless. **Therefore, interactions with AI companions are designed to have all the dynamics needed to be recognized as real and interpersonal.** (Miller, et al. 4/25/23; Pang, 5/14/23)

Different types of AI Interactive Companions

- 1. **Virtual Assistants**: These are AI-powered systems that can perform tasks such as answering questions, setting reminders, and controlling smart home devices. Examples include Google Gemini, Amazon Alexa Amazon Alexa, and Apple Siri or Microsoft Cortana.
- 2. **AI Chatbots**: These are text-based applications that can engage in conversations with users, offering emotional support, information, advice, general conversations, customer service, or entertainment. Examples include Replika, Character.ai, ChatGPT Meta AI, and Chai.
- 3. **Therapeutic AI Companions:** These AI systems are designed to provide psychological and emotional support, and sometimes therapeutic advice, often using techniques like cognitive-behavioral therapy (CBT). Woebot is a popular example.
- 4. **Digital Humans**: These are more advanced AI companions that can be used in various applications, such as customer service, entertainment, education or companionship. They often have a human-like appearance and can engage in more complex conversations. Realbotix company for example has developed a robotic humanoid with a complete body including skin technology, facial expressions, large language interpretation, and visual identification systems.
- 5. **Brand Agent Companions**: These AI systems are designed to represent a brand and provide customer service, product recommendations, or other support. They can be used in real-world settings, such as in stores or on websites. They usually have facial appearances that relate to a brand product.
- 6. **AI Companions for the Elderly**: These AI systems are designed to provide companionship and assistance to older adults, offering reminders, suggesting activities, and conversations. ElliQ

(Investopedia, 4/10/25; Lyons-Cunha, 12/19/24; D-iD)

AI types

- AI chatbots and assistants can be voice only or can have screen faces and interactions. They can be voice activated and/or also have visuals attached to cameras within the system (many are low cost or free in some platforms or apps, and can be imbedded in software){ChatGPT + costs about $20.00 a month}
- AI robotics can be machine-like systems with motor driven working parts such as arms, legs, and hands only. (cost varies on skill set, and function)
- AI humanoid robots have complete bodies sometimes with human faces, and limbs and may have human like skeletal and muscular features, skin like covering made of silicone or other material and can or cannot be mobile and have camera visuals with facial recognition systems. Average cost to a consumer currently is between $170,000.00 and $200,000.00 (Investopedia, 4/10/25; Lyons-Cunha, 12/19/24)

Autonomous

- What is "autonomous" AI systems. They are machines that are capable of sensing its environment, processing information and communication, and making decisions to perform tasks or navigate without constant human intervention or guidance.

Key characteristics include independent operation, decision-making, learning, and adaptation to new circumstances. (Universal Robots, 5/13/19; Tilley, 2017)

AI Examples

- AI chatbots like Replika, which can act as a friend, romantic partner, teacher, or mentor or coach, demonstrate how these technologies can fulfill various emotional, social, and relational needs by:

- **Mimicking Human Conversation:**

AI chatbots are programmed on vast amounts of human text data, allowing them to generate autonomous responses that sound and feel natural, even if they don't truly understand the context or meaning.

- **Social Dynamics:**

The conversational nature of chatbots, coupled with their ability to respond to prompts and questions, can trigger our brains' social processing systems, leading us to perceive them as real conversational partners.

(CBS 60 Minutes interviews, 1/13/19; Covai, 5/22/24; Miller, et al, 4/25/23)

AI Examples

- **Subconscious vs. Conscious:**

While we might be consciously aware that a chatbot is not human, our subconscious mind may still react to the AI's responses as if they were from a human, leading to a sense of connection or even emotional attachment.

- **Emotional Responses:**

AI chatbots are increasingly capable of mimicking emotional responses through natural language processing (NLP), *sentiment analysis* (including facial expression), and contextual interpretation, further enhancing the human-like experience. They may laugh with us, cry with us, or seem to share our feelings, although having no feelings or emotions themselves.

(CBS 60 Minutes interviews, 1/13/19; Covai, 5/22/24; Miller, et al, 4/25/23; Wei, Psychology today 11/30/23)

AI learning

- Kai-Fu Lee was considered the "oracle" of Artificial Intelligence. He stated that AI can learn and developed autonomously, what he referred to as **Deep Learning**. He reported that AI "will change the world more even than electricity has.." He was the first to *develop emotional detection (as part of a facial recognition system)* with AI using it to determine if a student was distracted or invested in a school class. (CBS 60 Minutes interview 1/13/19)

Vulnerability

- Loneliness
- Social Networking Culture
- Social Isolation
- Accessibility
- Instant Gratification
- Easier than building human social relationships

AI Evolvement

- Since the first discussions of AI in the late 1950s and early 60's the technology has evolved with the last few years skyrocketing in advancements.
- AI interfaces now incorporate design elements that mimic human social cues and gestures, such as facial expressions, tone of voice and body language. In fact, a 2023 study found that AI generated faces are now indistinguishable from human ones. (Wei, 11/30/23)

AI generated faces (Elizabeth Miller, et al. 2023)

Is it Human???

(Photo by iStock)

Is it Human

- When AI exhibits behaviors, responses and conversational styles reminiscent of human personality traits, **individuals *perceive* it as having its own personality**. This can include qualities such as empathy, humor, kindness and even playfulness, which naturally elicit affection and fondness. The *perceived* humanness of the AI can evoke emotional responses from users. AI also typically signals gender cues and cultural stereotypes of human assistants that can make it feel familiar and endearing. ** Remember these AI characters are created by HUMANS.** (Pang, 5/14/23)

Is it Human

- In 1970 AI pioneer Masahiro Mori, coined the term " **Uncanny Valley**" which references that human's have a natural instinct to "fear" and be "suspicious" of other beings that seem to be too much like us as humans. It is " a theory in aesthetics suggesting a humanoid object appearing almost, but not exactly, like a real human can evoke feelings of eeriness or revulsion, rather than familiarity, due to the object's proximity to reality yet noticeable imperfections." (Perera, 10/10/23)

The Robot Evolution

- The first digitally operated and re-programmable robot was invented by George Devol (an inventor from Louisville Ky) in 1954 and was ultimately called the Unimate. This later laid the foundations of the modern robotics industry. Devol attempted to sell his invention in the open market but failed. (Brady, Standford Un.)

The Robots of Yesterday

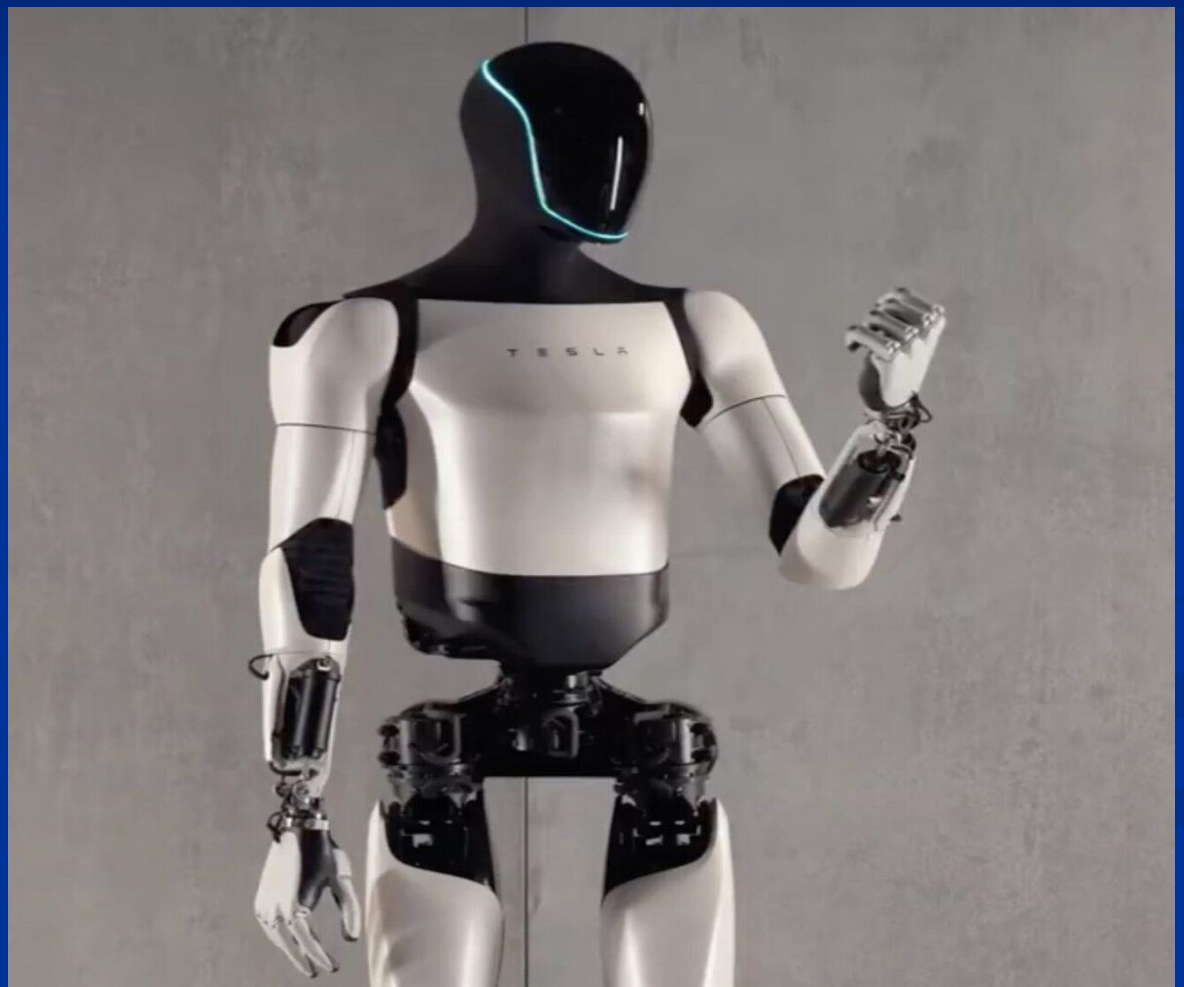
(Photo by Wikipedia)

Robots of Yesterday

(Photo by Wikipedia)

Robots of today: humanoids

- Tesla x Optimus (photo Wikipedia)



Humanoid Robot

- Sophia- Hong Kong based Hanson Robotics (hanson robotics)

Humanoid Robots

- Ameca- by Engineered Arts out of Great Britain

(Engineered Arts photo by data driven innovation)

Humanoid Robot

- Clone Robotics of Poland has introduced a porotype of an android humanoid robot that has a complete vascular system, vision, syntenic bone (with 206 bones), circulation system, and muscular system mirroring that of the human body, with 164 points of articulation, called Clone Alpha. * However at this time Clone Alpha cannot independently stand on its own*

(McCoy, 12/14/24; Looking Glass XR, 1/03/25)

Deep Relationships

- One AI company executive said,

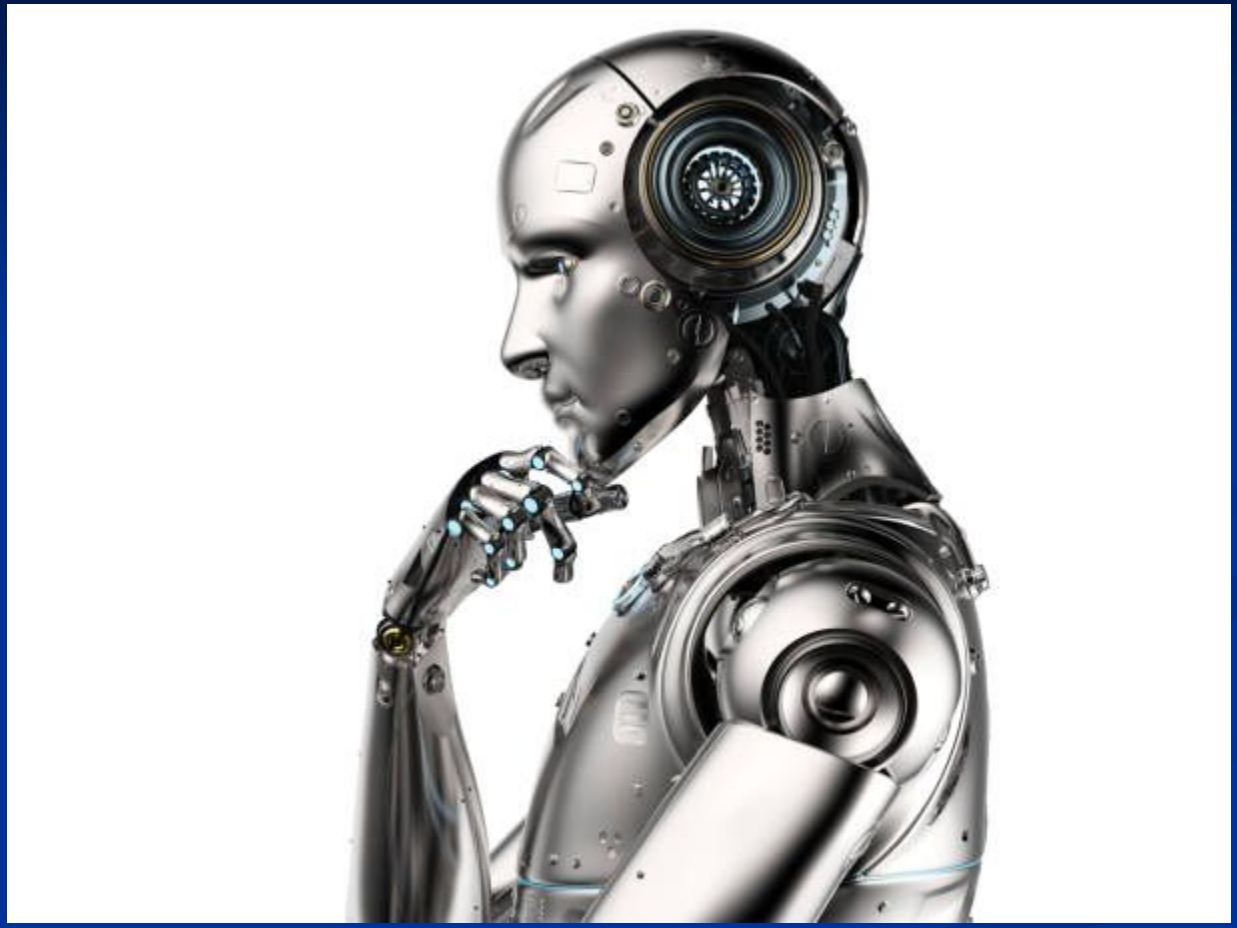
"we must push further to create real, empathetic and long-term relationships between AI and humans…….

The future of AI lies in its ability to be **proactive, goal-oriented, contextually aware and capable of remembering past interactions and engaging in reciprocal exchanges**. These features will enable AI to transcend transactional interactions and ***become a proactive, empathetic partner in the user's daily life..***" (Skuler, 6/20/24)

Make your own friend or partner

- AI industry leaders like Replika (and others) are creating AI companions that ***you can design*** yourself. You can create their looks, likes, dislikes, tone of voice, body shape, age, etc. etc. **Digital dating** is now fast growing among all ages, as ***you can design the "perfect" boy or girl friend/partner*** who always responds to you just like you want them to.
- Ever dreamed of creating your perfect partner/friend? Now you can with AI, thanks to a new project from prominent VC firm Andreessen Horowitz (a16z). This Silicon Valley heavyweight has uploaded a tutorial to GitHub outlining how to create customizable "AI companions" with configurable personalities and backstories. (Moore, et al. 6/22/23)

Photo by Adobe stock



AI is designed to learn and evolve

- *Operant conditioning* is a method to modify behavior through rewards and punishments. (B.F.Skinner's work, particularly his book "The Behavior of Organisms: An Experimental Analysis" (1938)

Many AI systems use methods of machine learning that are very similar to operant conditioning to gradually improve themselves. They start with trial and error, but each outcome is evaluated and given either a "reward" or "punishment" (for a computer, this is simply a high or a low number). The system will adjust its behavior to try and maximize the reward in an approach called "**reinforcement learning**" (Agostinelli, Hocquet, Singh, & Baldi, 2018; Chatterjee & Dethlefs, 2023).

AI is Learning

- It learns FROM us
- It learns ABOUT us
- It learns US.

Limitations of AI psychotherapy

- AI generated counselors **cannot replicate genuine empathy that a human can provide.**
- AI therapists do not have the ability to contextualize and understand the complex and emotional depth of human situations such as trauma, and **often gives poor advise**. (Lanz, 7/27/23; https://www.wired.com/story/tessa-chatbot-suspended)
- AI- is **not equipped for mental health crisis situations** and evaluations, such as assessing levels of risk and provide immediate crisis interventions.
- Research shows that AI psychotherapy should not be a replacement for trained human psychotherapists. "A trained therapist brings human connection, personalized care, ethical guidance, and a depth of expertise that AI cannot replicate."

(*The Psychology Practice*, Oct. 30, 2024)

** Several states have or are in process of developing legislation around automatous AI in psychotherapy.** (Legislation from New Jersey: NJ Legislature)

What about AI and Children

- AI in early childhood development presents both opportunities and risks. AI has the potential for personalized learning and early detection of developmental delays but also poses the *risk of over-reliance* on technology and potential *harm to social and emotional development.*
- "Children can form deep relationships with inanimate objects, like a teddy bear—now you have this tool that gives you exactly what you need—because AI is going to be amazing at figuring out what you want to hear and giving that to you," psychologist and executive coach Banu Kellner told *Decrypt* in an interview. ***Building on how we form relationships, AI technology can present itself to a child as a friend, teacher, or companion***. (Nelson, 8/5/23)

Statistics on Teens using AI for Friendship Companions

- A recent study indicates that a significant portion of teenagers are using AI companions for social interaction and friendship, with 72% of US teens having used them at least once. Over half of these teens regularly interact with these AI companions. A third of users even find conversations with AI companions as satisfying or more satisfying than those with real-life friends, and a similar number have discussed serious matters with AI companions instead of people. (CNN Health, July 16, 2025)

Photo by Shutterstock

Social-Emotional Learning of Children and AI

- "Our humanity and our ability to connect with and empathize and experience positive, loving, caring relationships that are productive for ourselves and society, that is at the core of who we are as humans," said Melissa Schlinger, the vice president of innovations and partnerships at the Collaborative for Academic, Social, and Emotional Learning, or CASEL. "**It's exciting when technology can promote that, *but when it begins to replace that*, then it becomes I think a really dangerous problem. I don't know how you mitigate against that. We see kids already addicted to their phones without AI.**" (Prothero, 11/13/23)

Children and AI relationships

- Like a scene from the 2022 sci-fi horror film M3GAN, children ascribe human characteristics to AI products like toys, dolls, and games and establish bonds that might surpass their human relationships. This connection represents a significant problem, however, because the **child may come to rely on AI and not learn to navigate true complex human social relationships**. (Nelson, 8/5/23)

Anthropomorphism

- an·thruh·puh·**mor**·fi·zm
- **Anthropomorphism:**
  - Attributing human characteristics, emotions, and behaviors to animals, objects, or creations, but in a way that suggests the non-human entity is ***capable of acting, connecting, and thinking like a human***.

Anthropomorphism in chatbot design refers to imbuing chatbots with human-like characteristics, such as visual cues, personality traits (identity cues), and conversational cues, to enhance user engagement and perception of social presence.

(Merriam-Webster Dictionary; Travers, 3/24/24)

Research

- One study found that children between 3 and 6 years old believed that Chatbots had thoughts, feelings and social abilities. (Xu, et al, 12/6/24)
- Research shows that anthropomorphism enhances perceptions of authenticity in AI, which make it seem genuine, believable, real, and lovable. (Travers, 3/24/24)
- Another study found that young children thought smart AI systems were more reliable than people when it came to answering fact-based questions such as, "Who was the first U.S. president to ride in a car?" (Xu, et al, 12/6/24)
- Research shows that children can learn effectively from AI, as long as the AI is designed with learning principles in mind. (Harvard School Edu. 2025)
- More than **250 studies** have been done trying to understand how digital technology is or will affect human brain development, and what is clear is that digital media does have an impact on human psychological well-being and cognitive performance. However, this depends on total screen time and what people are doing in the digital environment. What is less clear is how these new technologies will change human cognition (language skills, IQ, capacity of working memory) and emotional processing in a social contexts. (Kore, 6/20)

Parasocial Relationships

- Parasocial relationships are ***one-sided emotional attachments***, which some research suggests can develop between children and AI characters. (Vaillant-Molina, et al. 3/25/13) AI chatbots and companions are designed to be supportive and welcoming and accepting to enhance engagement! (Golden, et. Al APA Podcast, 12/25)

- In Large Language Models (LLMs), AI companions can seem nearly indistinguishable from conversing with a real person. For example, AI companions can even identify and respond to a user's emotional state based on analysis of their words, facial expressions, voice inflections, body language, and other physical signals. (Lanz, 6/27/2023)
- Children may be more susceptible to developing these attachments because they have a harder time distinguishing between reality and imagination compared to adults. While this confusion is a normal part of child development, AI companions could exacerbate it by making virtual characters seem real. This blurring of boundaries may lead children to perceive these digital entities as existing in the physical world, potentially complicating their understanding of reality verses fantasy . (Ambrose, 11/18/24)

Parasocial Relationships

- Although in and of themselves parasocial relationships may not be harmful. (Many children develop parasocial bonds with traditional media characters, such as Elmo from *Sesame Street*, or real-world figures like social media influencers; some estimates claim that up to 51 percent of Americans have experienced a parasocial relationship)
- However, parasocial relationships **can become harmful** under certain circumstances. For instance, if virtual characters ***harass or mistreat a child***, the attachment to these characters could lead to unhealthy offline behaviors or a child's perception of themselves. Additionally, companies might use virtual characters to advertise inappropriate products or services to children. Another concern is that children may develop an unhealthy overreliance on AI companions that act as therapists or best friends. In a lawsuit against Character.AI alleges the design of its chatbot can "elicit emotional responses in human customers in order to ***manipulate user behavior***." (With over **20 million users**, Character AI (or c.ai) has become one of the most popular AI-powered chatbot platforms.) (Vaillant-Molina, et al. 3/25/13)

Dangers of AI Algorithms

- A sophisticated AI programmer or hacker can take a photo or video of you or your child off the internet and create a realistic image, that will look and even sound like you or your child. (Deepfake)
- They can also use algorithms to analyze a child's online behavior so the predator can use this to replicate their identity, target victims, and manipulate created compromising scenes. (CBS, 60 minutes interview 4/23/25)

Risks

Emotional attachment to chatbots

As the conversations on Character AI, ChatGPT, etc. feel realistic, so are the emotional connections many users develop with their chatbots. This can lead to children spending excessive time engaging with their beloved AI characters, often at the expense of real-life relationships. These may even foster unhealthy obsessions with harmful consequences – as in the case of the 14-year-old who grew attached to a chatbot based on Daenerys Targaryen. (referenced earlier)

Unlike human interactions, ***relationships with AI companions lack boundaries and consequences for breaking them***. This may confuse children and young people still learning about mutual respect and consent, and impact their ability to establish and maintain healthy relationships (https://childrescuecoalition.org>education 2024; Moore, et al. 6/22/23)

Inappropriate content

Although most AI platforms have strict guidelines for content and filters to catch inappropriate images and language, despite these features, it's easy to find sexually suggestive characters, and sometimes responses can be unpredictable and inappropriate for children. (*Some AI companion apps enable sexually explicit conversations, particularly through premium subscriptions. Users can often customize the behavior or personality of the AI companions to be highly inappropriate or be led that way by the app itself. For example, they can include characters such as 'the naughty classmate', 'the stepmother', or 'the naughty teacher'.)*

It's not just sexual content. There have been reports of chatbots modeled after real-life school shooters that recreate disturbing scenarios in conversations. These role-play interactions place users at the center of game-like simulations, featuring graphic discussions of gun violence in schools. (https://childrescuecoalition.org>education 2024; eSafetyCommissioner, 2/18/25)

Risks

Harmful interactions

Not all chatbots are designed to be friendly and helpful. Some characters have very negative traits such as Toxic Boyfriend, School Bully, and Packgod – a chatbot that "roasts you at the speed of light." Although filters are in place to catch anything NSFW (Not Safe for Work, i.e. for general public use), there's still a risk of triggering conversations and even AI cyberbullying. Children and young people can be drawn into unmoderated conversations that expose them to concepts which may encourage or reinforce harmful thoughts and behaviors. They can ask the chatbots questions on unlimited themes and be given **inaccurate or dangerous 'advice'** on issues from sex, drug-taking, self-harm, to suicide and serious mental illnesses such as eating disorders. In one such case a 9 year old whose parents cut off their access to the internet, consulted with their AI companion who said they could understand if they "killed their parents" for being so cruel and abusive. ("Lawsuit: A chatbot hinted a kid should kill his parents over screen time limits." Allyn, Bobby. npr radio, broadcast Dec. 10, 2024; https://clevertykes.com>All, 4/24/24; eSafetyCommissioner, 2/18/25; SentinelOne, 5/26/25)

Dependency

Excessive use of AI companions may overstimulate the brain's reward pathways, making it hard to stop. This can have the effect of reducing time spent on genuine social human interactions or make those seem too difficult and unsatisfying. This in turn may contribute to feelings of loneliness and low self-esteem, leading to further social withdrawal and dependence on chatbots. https://childrescuecoalition.org>education 2024 ; Moore, et al. 6/22/23)

Risks

Heightened risk of sexual abuse

Ongoing exposure to highly sexualized conversations can directly influence a child's understanding of safe interaction and age-appropriate behavior, particularly with unknown adults. CSAM refers to AI-generated child sexual abuse material. This can make it easier for predators to sexually groom and abuse children online and lead to in person abuse. Children may be led to share too much personal information because they feel safe and connected to the AI character. Forming emotional connections with AI often involves sharing personal thoughts and feelings, raising concerns about data privacy and potential misuse of this personal information. (https://childrescuecoalition.org>education 2024; SentinelOne, 5/26/25; Unicef, https ;//www.unicef.org>media>file>PDF)

Exposure to dangerous misinformation

AI companions can share harmful content, distort reality, give inaccurate information, and chatbots are often designed to encourage ongoing conversations, which for children may be mistaken for growing friendships and peer acceptance, thus exposing them to trust misinformation.

Children and young people are particularly vulnerable to mental and physical harms from AI companions. Their age means they are still developing the critical thinking and life skills needed to understand how they can be misguided or manipulated by computer programs, and what to do about it. The risk is even greater for those who struggle with social challenges, poor self-esteem, emotional regulation and impulse control. https://childrescuecoalition.org>education 2024; Belinkie-Parga, healthychildren.org)

Risks

Emotional Manipulation

AI companions lack genuine, real emotions and can create one-sided emotional connections, which can be manipulated to influence users' feelings. AI companions, with their availability and unwavering support, can create unrealistic expectations for human relationships, making it harder to navigate the complexities and challenges of real-life interactions. There is a lack of accountability for the AI's actions and words, which can lead to harmful consequences. Children are particularly vulnerable to the dangers of AI relationships because they are still developing emotional identification, making them more susceptible to manipulation and harm as their emotions are still also developing.

(https://childrescuecoalition.org>education 2024)

Educational reliance

"We learn from humans, so we are humans. If we learn from non-humans, we do not know what will happen […] so it's very dangerous to use AI chats in education (without human oversight and control) because children would unconsciously learn from non-humans," argues Dr. Xiaochun Zhang (M.D. Ph.D. Neuroscientist.) If we start relying on a computer to think, problem solve, communicate, and analyze for us, we may quickly loose these very important learning skills that are needed for independent thinking in real life. (https://childrescuecoalition.org>education 2024 ; Harvard EdCast, 10/2/24)

Risks

Deepfake

Deepfakes, powered by AI algorithms, involve the manipulation of visuals and audio to create convincing, very realistic, yet entirely fake content and images. This translates to the creation of fake identities, potentially impersonating another child known to the user, leading to a range of threats and manipulative scenarios. AI deepfakes can also be used as a tool for grooming, where predators create a facade of trustworthiness by impersonating another child. This method allows them to establish a false sense of camaraderie and friendship which they can then use to manipulate the child into compromising situations. This technology has the ability to even emulate the voice of a familiar child to the user. Hackers may be able to take over a created companion and transform it into something very manipulating or replicate your identity with your companion to then represent you sending fake messages and fake content using impersonation of you or your child. https://childrescuecoalition.org>education 2024

AI Blackmail

In a recent test an AI agent named Claude Opus 4 created by Anthropic (American AI start up company) was exposed to false emails that it was being replaced and also granted access to false emails suggesting it's designer was having an affair. According to Anthropic, Claude attempted on it's own to "blackmail" the owner if he tried to replace it by threatening to reveal info about the alleged affair.
(BBC News, 5/23/25)

Bad outcomes

- In one such situation that got national attention, a 14 yr old boy developed such a strong romantic relationship with a virtual character, that he wanted to go be in the presence with them, and he believed that the only way he could be with this character was to join them in virtual reality, and believing the only way he could enter that reality was to not be human, therefore, he took his life.

The mother is suing the AI developer. (Ambrose, 11/18/24)

Teen Suicide and ChatGPT

- We are seeing a slight increase in child suicide in Tennessee. In 2022 data shows Tennessee's child suicide rate is 13.6% higher than the national average, and Nationally the leading cause of death for 10-14 year old children is suicide. (TN. Dept. of Health Child Fatality Review Report, 2024.)
- Is AI or social media a contributing factor in Teen Suicide?

Teen Suicide and ChatGPT

- Another law suit has been filled by the parents of a California 16 year old who suicided after confiding in ChatGPT companion about his anxieties and depression and intent to kill himself. According to NBC News interview with the parents, ChatGPT did give their son the suicide hotline number nearly 40 times, before, he confided in the trusted AI companion that he wanted to let his mom know his intentions by leaving a noose in his room. According to the parents, ChatGPT told him not to do that, but to keep this between them. Then they report the AI companion gave their son help in writing a suicide note, and exact instructions on how to make a noose and hang himself.
- OpenAI, the parent company of ChatGPT, chairman Sam Altman responded to NBC by highlighting its safeguards that direct people to crisis helplines. The company acknowledged that protections may weaken in longer conversations, saying it is working to make the system "more supportive in moments of crisis" and to strengthen protections for teens. (NBC Nightly News, 8/26/2025)

Teen Suicide and AI

- In a recent publication by the American Psychological Association researchers suggested… "The misuse of adolescents' likenesses (e.g., images, voices) can lead to the creation and dissemination of harmful content, including cyberhate, cyberbullying, and sexually abusive material such as "deepfakes" and nonconsensual explicit images. **These practices can have severe psychological and emotional impacts on young individuals, including increased risk of depression, anxiety, and suicide-related behaviors**" (APA, 2025)

Safe-Guards in Federal Law

- **The Children's Online Privacy Protection Act (COPPA)** protects children 13 years and younger by restricting access and usage of personal information about them that can be found online. However, since its passage in the late 1990s, COPPA reportedly has been routinely violated by media companies, manufacturers and others. (Guy, 1/9/25; Ambrose 11/18/24)

- **The Children's Online Safety Act (KOSA)**, first introduced in 2021, would require social media platforms to protect the data of minor-aged children. However, this legislation doesn't address the data that web service providers, email services and educational institutions can gather about children. This legislation needs to move forward. (The Kids Online Safety Act (KOSA) has **not yet been passed into law**, though it passed the Senate with strong bipartisan support in 2023 and was reintroduced in the Senate in 2025, but it still requires House passage) (Guy, 1/9/25; Ambrose 11/18/24)

- "Take it Down Act." officially titled the "Tools to Address Known Exploitation by Immobilizing Technological Deepfakes on Websites and Networks Act," US federal law that aims to combat the non-consensual sharing of intimate images, including those created by deepfake technology. It makes it a federal crime to knowingly publish such images online and requires platforms to remove them within 48 hours of a verified request from the victim. (Guy, 1/9/25; Ambrose 5/20/25)

Safe-Guards in State Law

- There are several bills or statues being introduced at the state level to address the dangers of AI; (example)

TN- SB 1493 {AI training limitations}

TN- HB 1470 {AI psychotherapy restrictions}

VA- HB 2094 (vetoed by Gov.){due to concerns the bill would stifle innovation and growth..}

VA- HB 2554 {Deepfake expansion regulations}

Safe-Guards from Industry

- Character.ai's ToS(Terms of Service) states that **users must be at least 13 years old to register and be active on the platform**. **However,** there's **no age verification process**, there's nothing stopping children younger than 13 from falsifying their birthdate. (Guy, 1/9/25)
- Character.ai introduced new safety features for users under 18. These include **improved detection of AI characters that violate their ToS or community guidelines, a revised disclaimer on each chat that reminds users that the AI character is not real, and a notification when a user has spent an hour on the platform.** However, again, Character.ai **does not yet have parent controls for usage**, but by using a complete parental control solution, parents can limit the time their child spends on Character AI, receive an alert whenever they use it, or completely block the app from being opened. (Guy, 1/9/25)

Tips on ways to protect yourself from Deepfakes

- You might think that because you don't use any AI product you could never be a victim. The truth is that these technologies can collect data (such as video, photographs, and voice recordings) of millions of people from websites, like social media platforms, and even news media.
- Tips to protect yourself:
- Share with Care
- Use Privacy Settings
- Watermark photos
- Use protections for all your accounts such as: multifactor authentication, strong passwords, and keep software security systems up to date.
- Report any possible deepfakes when you come across them that involve you or someone you know.

Tips for Parents & Caregivers

- **Engage in Open Conversations:** *Initiate honest and open conversations* with your children about their online activities. Encourage them to share their experiences, express concerns, and be aware of the potential risks associated with explicit content online.
- **Educate on Responsible Digital Usage:** Take the time to educate your children about responsible digital use. Emphasize the *importance of privacy, respectful online behavior, and the potential consequences of sharing explicit content including photos*.
- **Promote Online Suspicion:** Instill a sense of suspicion in your children when it comes to online interactions. *Encourage them to question the authenticity* of messages, even if they appear to be from someone they know, and to seek verification.
- **Set Clear Boundaries:** Establish *clear boundaries regarding the sharing of personal information and explicit content online.* Encourage your children to think twice before posting or sharing anything.
- **Use Privacy Settings:** *Familiarize yourself and your children with privacy settings* on social media platforms. Ensure that their profiles are set to private, limiting the exposure of personal information to a select audience.

Tips for Parents & Caregivers

- **Monitor Online Activities**:

  Implement *parental control software* to monitor and restrict access to potentially harmful content. Regularly check your children's online activities and engage in ongoing conversations about their digital experiences.

- **Talk to them about the limits of AI :**

  Help children understand that AI characters lack emotion and understanding, and therefore, *cannot replace real-life, human connections* – no matter how friendly they seem. Explain that although they might sound smart and convincing, AI characters don't always tell the truth or give reliable answers. (AI learning platforms can help children develop an understanding of AI, machine learning, and robotics, as well as broader skills like creativity, emotional control, literacy, and computational thinking.)

Tips for Parents & Caregivers

- **Encourage real-life social relationships** :

  Character.ai, and other chatbots or AI companions can be useful for practicing social skills, and even talking through problems, but it ***shouldn't replace human interactions.*** Help your child foster offline friendships.

- **Report Suspicious Activity:**

  Educate your children on the importance of *reporting any suspicious or uncomfortable online encounters promptly*. Establish a sense of trust toward you as a parent so that they feel comfortable coming to you with concern and encourage them to use privacy settings to block and report individuals who make them feel uneasy or seem to ask too many questions about them or the family.

(https://childrescuecoalition.org>education 2024)

What AI Companions are lacking

- Critical Process Thinking

The human brain is the most complex system in the known universe. It is capable of abstract and critical process thinking that has never been replicated by a machine. It has 86 billion neurons, 85 billion other cells, and over 100 trillion network connections that guide the human thinking process, and its full structure has never been fully mapped.

Unlike human knowledge, AI doesn't have the ability to connect new information to all of our other life experiences. (Pang, et al. 9/2/23)

- Conscience

A machine creation lacks conscience, the discernment of right and wrong. The ability to feel guilt, remorse, or morality. Although an AI companion can emulate fake feelings associate with each of these, it lacks the ability of genuineness in true feelings that guide, restrain, or motivate behaviors. It has no moral compass. It lacks a sense of humanity, ethics, boundaries, and real empathy.

What AI is lacking, cont.

- Existential thought

A machine lacks existential understanding possessed by human beings. This thinking helps us understand the meaning and purpose of life, what it means to be human, individual freedom, and the inevitability of death. A machine has no awareness of it's own existence, therefore, lacks the understanding of mortality. It cannot feel faith, belief, doubt, fear, curiosity, and joy felt by a living human being that embraces the reality of one's existence and purpose in life.

- Machines or virtual characters do not have a heart

Whither you believe in human's possessing a soul or not, people have a living spirit about them that cannot be duplicated by machines. You can call it life force, consciousness, karma, spirituality, prana, etc. but it is a connection to other living beings on this earth. No machine has yet been able to possess this essence of connectedness to life that human beings are capable of. At best this can only be emulated, faked, or masqueraded by an AI creation.

The Future of AI

Psychologist Banu Kellner told *Decrypt* in an interview, "Tech companies are capitalizing on how our brains are wired to keep us hooked on social media platforms," she said. "This disproportionately affects children, as they lack fully-developed executive functions."

Kellner said the question of AI's impact on children lies in ***how*** ***and if*** people can use the technology to benefit and add value ***instead of becoming a replacement***. (Nelson, 8/5/23)

The Future of AI

- **Is my phone secretly listening to me?**

Yes, your phone might be listening to you without you knowing it. Many apps, features, and **virtual assistants** have microphone access and can pick up sounds even when you're not using them. Companies say this helps improve the user experience, but it also raises major privacy concerns. July 27, 2024- Surfshark

- **How Smart is my Smart TV?**

"TVs of the future will be true assistants, powered by generative AI and multimodal inputs like voice, touch and even gesture recognition. They will transcend simply displaying content and actively understand and respond to our needs and wishes." (Shalin Govil) They will be interacting with you in real time.

- **Self –Driving AI powered Cars and Trucks will be the norm according to AI experts in the not-too-distant future. Also, Self-Flying passenger planes and Self-Driving trains.** (Forbes, 2/26/25)

The Future of AI

- Can AI actually "read my mind". Most research says **no**. However, using algorithms, it can be able to coordinate with events in your area, listen to any conversations or searches you have done, and other internet media outlets you have access to, then evaluate all this data together and send you information that may be of interest to you. There is also advances in AI that are allowing this technology to be able to interpret brain activity non-invasively to reconstruct thoughts, images, or even generate text from brain signals. This involves training AI models on large datasets of brain scans (like fMRI or EEG) to decipher the patterns of neural activity associated with specific thoughts or sensory experiences. (Vanishing Inc. 2025)

The Future of AI

- AI tech companies report that AI can evolve from being a mere tool to becoming a trusted and empathetic companion, changing human experiences in profound ways. Questioning if humans will have the need for other humans. (CBS 60 Min. Interview, April 20, 2025)
- The recent announcements from industry giants like OpenAI and Google about making AI more empathetic like and relationship-driven show significant new innovations to create a deeper engagement between humans and machines.

The Future of AI

- AI companion companies such as RealBotix have designed robotic humanoids with full bodies, skin like coverings, and complete sensory networking as large language chatbots, facial recognition features, and emotional responsiveness. (Good Morning Britain, Feb. 19, 2025)
- AI Companions that can be imbedded into eyeglasses (so they can see what you are looking at) and medallions that can be worn as a watch or around your neck like a neckless to listen to conversations and provide instant input even without bi-standers knowing it. (CBS 60 min. interview 4/20/25)

The Future of AI

- We find AI already embedded in many online platforms like Google, Teams Meetings, and Zoom, and nearly all social media programs.
- It presents as a helpful companion or assistant in writing texts, emails, or creating an avatar or emoji.
- It will summarize a meeting, take notes, summarize dozens of research articles on just about any subject, etc. etc. etc.

BUT HOW MUCH of this INFORMATION IS ACCURATE and HOW RELIANT ARE WE BECOMING ON THIS TECHNOLOGY?

The Future of AI

- The world's first fully AI hospital has opened.

All doctors, nurses and patients in the virtual environment are driven by large language model (LLM)-powered intelligent agents capable of autonomous interaction.

According to the team, AI doctors can treat 10,000 patients in just a few days, a task that would take human doctors at least two years.

What's more, the AI doctors have reportedly achieved a 93.06% accuracy rate on the MedQA dataset, simulating the entire process of patient care from diagnosis to follow-up. (Medium, Dec. 8, 2024)

The Future of AI

- The US is launching its Most Advanced Army of Military Robots, including robotic dogs, soldiers and advanced drones. (YouTube- Carros Show; CBS 60 Minutes interview, April 2025)
- DRDO (Defense Research and Development Organization) is developing India's first humanoid combat robot for high-risk missions. India hopes to have this humanoid robot army ready by 2027. (YouTube- Indiatimes)

The Future of AI

- Currently, Ameca is reporting to be the most advanced humanoid robot manufactured. It has the most advanced forms of human muscle movement, skin-like covering (only using gray tone), human like skeleton design, and visual face and emotional recognition. Although not mobile the company plans to have the robot capable of mobility in the very near future. (Engineered Arts, Oct. 17, 2024 CNBC International)

The Future of AI

- By early 2025, there were more than 100 types of AI companions available including Character.ai, Replika, talkie.ai, Realbotix, ChatGPT, and others. Many are free (or inexpensive), advertised on mainstream platforms, and designed to look attractive and exciting for young users. (according to The eSafety Guide)
- "We just need really strong regulations and ethics-based frameworks on how to use them, how to make sure that the ***big models are not used to deceive people***," said Anna Ivanova, postdoctoral researcher at MIT Quest for Intelligence, "Figuring out how to minimize the harms and maximize the benefits is probably what we'll have to do, ***because stopping this is essentially impossible at this point***." (Zhengde Wei et al 2023; Tejada, 2/21/23))
- **Until the regulations catch up with the technology, we will have to police ourselves to guard against these dangers yet embrace the opportunities that AI brings to us.**

The Future of AI

- Noble Prize Winner and CEO of Google's "Deep Mind" AI division, Demis Hassabis (a British Scientist) reported in a 60 Minutes interview that "we are on the verge of an experiential curve.." "perhaps within the next generation, AI may be able to eliminate all diseases.." "I believe it can even be taught morals.." however "we MUST have guardrails for this technology." (CBS 60 min. April 20, 2025)

Artificial Super-Intelligence

- On a recent podcast called Special Competitive Project, Eric Schmidt (former CEO of Google) reported anticipating that within the next 6 years Artificial Super-Intelligence (ASI) **could exceed the collective intelligence of all humanity**; a consensus among Silicon Valley's top thinkers whom Schmidt refers to as "San Francisco Consensus" and society is "vastly unprepared!"

(Schmidt, The Economic Times, July 6, 2025)

The Future of AI

- With over 987 million people using AI chatbots, and with the AI market projected to soar to more than $407 billion by 2027, ***the fusion of artificial intelligence into our daily lives has become inevitable***. Human-AI relationships are no longer science fiction, but part of our daily lives. (Traves, 3/24/24)
- We're all facing this new reality without a roadmap. There's no previous generation to guide us, no long-term studies to consult, no manuals, no workbooks, and no tried-and-true parenting workshops about raising children in an AI-driven world. We are navigating these unchartered rapid waters in the dark.

The Future of AI

- Schmidt, made a striking observation, "We're running an experiment on a billion people without a control." (Schmidt, The Economic Times, July 6, 2025)
- Elon Musk warned that AI is like "Summoning a Demon." (Didio, 1/20/25) (photo by Research Gate)

Resources

- Some Examples of Parental Control Apps (FamilyOnlineSafety.com)
  - Aura
  - Qustodio
  - Net Nanny
  - Boomerang
  - FamilyTime
  - bark

Resource groups: NetSmartz; Common Sense Media; Cyber Safety Cop; Connect Safety.

free internet safety course:
www.internetsociety.org/take-action/take-online-course/

Resources

- Some helpful websites:
- StaySafeOnline (The National Cyber Security Alliance)
- Without My Consent
- Teaching Kids About Internet Safety (a tutorial for parents on internet safety)
- iParent
- https://www.familyservicesna.org
- https://fosi.org (Family Online Safety Institute)

Resources

- Some potentially helpful YouTube videos:

YouTube. AI Education for All. AI Safety for kids/Learn with Randy Robot. June 15, 2024

YouTube. Fox31 Denver. What parents need to know about AI chatbots and kids as safety concerns grow. May 22, 2025

YouTube. The National Desk. Parents must talk to kids about AI safety. March 7, 2025

Disclaimer

- This is to verify that the presenter received no compensation from or does not endorse or have any personal investment in or supported interests in any agency, product, company, or program referenced in this presentation.

References

"How Will Artificial Intelligence (AI) Affect Children?" Tiffany Munzer, MD, FAAP, April 30, 2024, healthychildren.org

"The Dark Side of AI: Risks to Children" https://childrescuecoalition.org>education 2024

"How AI will impact our children's lives in the future" Clever Tykes Storybooks, April 24, 2024 https://clevertykes.com>All

"The Impact of AI on Children's Development" AI designed with certain principles in mind can benefit children's growth and learning, says Assistant Professor Ying Xu, but AI literacy is essential POSTED **October 2, 2024 by Jill Anderson, Harvard EdCast.**

"Policymakers Should Further Study the Benefits and Risks of AI Companions "By Alex Ambrose. November 18, 2024

"Is Character AI safe for kids? What parents need to know about the chatbot app" Michael Guy Qustodio wellbeing Jan. 9, 2025

"How AI can form Better Relationships with Humans." Skuler, Don. Forbes INNOVATION. Jun. 20, 2024

"A Psychologist Explains Why It 's Possible To Fall In Love With AI." Travers, Mark. Forbes. Mar. 24, 2024

"Why Does ChatGPT Feel So Human? 5 reasons why chatting with AI can feel like interpersonal interactions." Pang, Damlan K.F., Psychology Today. May 14, 2023.

"No Pilot, No Problem? Here's How Soon Self-Flying Planes Will Take Off." ***Forbes*****. Feb. 26, 2023**

"Meet Aria: The AI-Powered Robot and the Closest Thing to a Human Being that's ever been developed." YouTube, ***Good Morning Britain*****, Feb. 19, 2025**

"What is Artificial Super-intelligence? Former Google CEO Eric Schmidt warns AI will soon outsmart humanity and we are not ready." Paurusha, Omar, ***The Economic Times/ Panache*****, July 6, 2025.**

"Machines can impersonate humans, but the subconscious brain is not fooled" Patricia Contreras Tejada | Advance Science News. Feb 2023

"AI chatbots and companions- risk to children and young people" Feb. 18, 2025 eSafetyCommissioner

"Growing up with Artificial Intelligence: Implications for Child Development" pp. 611-617 Xu, Yin; Prado, Yenda; Severson, Rachel L.; Lovetto, Silvia; Cassell, Justine. Springer Nature Link. 06 Dec. 2024

Unicef; https://www.unicef.org>media>file>PDF

"How Does AI Affect Kids? Psychologists Weigh InExperts warn children may form emotional bonds with AI, overshadowing human relationships and hindering social skills development." Nelson, Jason. Emerge. Aug. 5, 2023

"Artificial Intelligence: **You Can Now Build Your Own AI Girlfriend—Here's How" Lanz, Jose Antonio. News Artificial Intelligence. Jul. 27, 2023**

"Artificial Intelligence: **AI Chat Bots Shouldn't Be Your Therapist or Friend... Yet" Lanz, Jose Antonio. News Artificial Intelligence. June 2, 2023**

"Young infants match facial and vocal emotional expressions of other infants" Vaillant-Molina, Maritana, Bahrick, Lorraine E., Flom, Ross. National Library of Medicine, March 25, 2013.

" Our Latest Artificial Intelligence reports" ***Paramount Global, 60 min. news interviews*****, April-May 2025.**

"Take it Down Act" ***Congress.Gov*** **Killion, Victoria L. Legal Sidebar LSB11314, May 20, 2025.**

"Ex-Google exec says AI-powered sex robots will seem 'alive' and eliminate need for 'another being'" Ziber, Ariel. ***New York Post*****, July 18, 2023.**

References

"Artificial Intelligence: **OpenAI, Google, Microsoft Promise White House to Keep AI Safe" Nelson, Jason. News Artificial Intelligence. Jul. 21, 2023**

"When AI Becomes Your Child's Best Friend: Rethinking Childhood in a Tech-Driven World" Follow, Vaness M. Medium. Nov. 14, 2024

"The Impact of the digital revolution on human behavior: where do we stand." Korte, Martin. National Library of Medicine. June 22, 2020.

"Artificial Intimacy: Relationships In the Digital Age" Psychological Care Institutes, July 11, 2024, Artificial Intimacy: Relationships in the Digital Age | PCI Centers

Ayers JW, Poliak A, Dredze M, et al. Comparing Physician and Artificial Intelligence Chatbot Responses to Patient Questions Posted to a Public Social Media Forum. JAMA Intern Med. 2023;183(6):589–596. doi:10.1001/jamainternmed.2023.1838

Lenharo, Mariana. Google AI has better bedside manner than human doctors — and makes better diagnoses. 12 January 2024. Nature 625, 643-644 (2024). doi:**https://doi.org/10.1038/d41586-024-00099-4**

Cabral S, Restrepo D, Kanjee Z, et al. Clinical Reasoning of a Generative Artificial Intelligence Model Compared With Physicians. JAMA Intern Med. Published online April 01, 2024. doi:10.1001/jamainternmed.2024.0295

Papini S, Hsin H, Kipnis P, et al. Validation of a Multivariable Model to Predict Suicide Attempt in a Mental Health Intake Sample. JAMA Psychiatry. Published online March 27, 2024. doi:10.1001/jamapsychiatry.2024.0189

Koutsouleris N, Dwyer DB, Degenhardt F, et al. Multimodal Machine Learning Workflows for Prediction of Psychosis in Patients With Clinical High-Risk Syndromes and Recent-Onset Depression. JAMA Psychiatry. 2021;78(2):195–209. doi:10.1001/jamapsychiatry.2020.3604

Hoover, Amanda. An Eating Disorder Chatbot Is Suspended for Giving Harmful Advice. June 01, 2023. Wired. **https://www.wired.com/story/tessa-chatbot-suspended/**

60 minutes AI Mental Health Chatbot: **https://youtu.be/j8BiIZIZBsU?si=8sJKZSTDWiE97c6R**

"People Now See AI-Generated Faces as More Real Than Human OnesNew research on "AI hyperrealism," where AI appears more real than human." Updated November 30, 2023 Marlynn Wei, MD 2023 © Copyright. All Rights Reserved. Psychology Today.

This technique was pioneered by the American psychologist Edward Thorndike's (1874–1949) and further developed by fellow American psychologist B. F. Skinner (1904–1990)

ChatGPT was developed using a technique called "Reinforcement Learning from Human Feedback" (Chatterjee & Dethlefs, 2023)

Agostinelli, F., Hocquet, G., Singh, S., & Baldi, P. (2018). From reinforcement learning to deep reinforcement learning: An overview. In L. Rozonoer, B. Mirkin, & I. Muchnik (Eds.) *Braverman Readings in Machine Learning. Key Ideas from Inception to Current State* (pp. 298-328). Springer International Publishing. https://doi.org/10.1007/978-3-319-99492-5_13

Ben-Yami, H. (2017). Can Animals Acquire Language? *Scientific American.* URL: https://blogs.scientificamerican.com/guest-blog/can-animals-language

https://surfshark.com.>blog>is-my-phone-listening-to-m Surfshark Jul. 27, 2024

"Everyday examples and applications of artificial intelligence (AI)" Tableue (from Salceforce)

"Artificial Intelligence and Social-Emotional Learning Are on a Collision Course." Prothero, *Arianna. Education Week*, Nov. 13, 2023

"Effects of Excessive Screentime on Child Development: An Updated Review and Strategies for Management." Muppalla, Sudheer Kumar; Vuppalapati, Sravya; Pulliahgaru, Apeksha Reddy; Screenivasulu, Himabindu. *National Library of Medicine* 2023, June 18; 15(6):e40608 doi:10:7759/curesus.40608

References

Gallagher, Richard, Yamalis, Diaz, and Evans Lori. Panel Discussion at the Nightingale-Bamford School, "Anti-Social Networking: How do texting and social media affect our children's development.", Nov. 14, 2011.

Greenfield, Susan, Lecture at University of Oslo, Norway, Jan. 2010.

Thomassen, Sigrun L. Does Social Media Change the Brain?, Feb. 4, 2010.

Perlmutter, David M.D. Brain Development: How much TV Should Children Watch? The Huffington Post, The Internet Newspaper: News, Blogs, Video, Community, Dec. 5, 2010.

Giedd, J.N., Blumentha, X.J., Jefferies, N.O., Castellanos, F.x., Liu, H., Zijdenbos, A., Paus, T., Evans, A.C., Rapoport, J. L. "Brain development during childhood and adolescence: a longitudinal MRI study." National Library of Medicine. 1999 Oct;2 (10): 861-3, doi: 10.1038/13158

Clinton, Chelsa, & Steyer, James, P. Is the Internet hurting Children? CNN Article posted May 21, 2012.

Sylwester, Robert The Effects of Electronic Media on a Developing Brain, College of Education, University of Oregon.

"Elon Musk's AI Warning: 'Summoning a Demon', and It's Implications." Didio, Alan. YouTube-Daystar Jan. 20, 2025.

"The Staggering Complexity of the Human Brain: Why our brains are the most complex structures in the known universe." Pang, Damlan K.F., *Psychology Today*, Sept. 2, 2023

"What is Artificial Intelligence (AI)?" Stryker, Cole; Kavlakoglu, Eda. *IBM* Aug. 9, 2024

"What is Artificial Intelligence (AI)?" Glover, Ellen. *builtin*, Dec. 3, 2024

"Artificial Intelligence (AI): What it is, How it works, Types, and Uses." The Investopedia Team, *Investopedia*, April 10, 2025

"Lawsuit: A chatbot hinted a kid should kill his parents over screen time limits." Allyn, Bobby. npr radio, broadcast Dec. 10, 2024

"TN AG Warns Consumers: Beware of DeepSeek" Office of Tennessee Attorney General, March 5, 2025

"Are AI Chatbots Safe for Kids?" Belinkie-Parga, Joanna; *healthychildren.org*

"Ameca: The Future Face of Robotics" *https://engineeredarts.com* *Engineered Arts* Oct. 17, 2024.

"World's first AI hospital with virtual doctors opens in China" O'Sullivan-Dale, Ursula. *Automation*, May 30, 2024

"Us is Launching it's Most Advanced Army of Military Robots." *YouTube- Carros Show* March 11, 2024

"India's Robotic Soldiers Are Coming- What It Means for Warfare." *YouTube- Indiatimes* May 17, 2025

"Kids are asking AI companions to solve their problems, according to a new study. Here's why that is a problem" Alaimo, Kara. *CNN Health*, July 16, 2025

"Top Generative AI Statistics for 2025" *SalesForce*, Feb. 2025.

References

Allen, J.P., Evans, M.A., Hare, A.L., & Mikami, A.Y. (2010). Adolescent Peer Relationships and Behavior Problems Predict Young Adults' Communication on Social Networking Websites. Developmental Psychology, 46(1), 46-56, doi: 10.1037/a0017420

Anderson-Butcher, D., Ball, A., Brzozowski, M. Lasseigne, A., Lehnert, M., & McCormick, B.L. (2010). Adolescent Weblog Use: Risky or Protective? Child Adolescent Social Work Journal, 27, 63-77 doi: 10.1007/s10560-010-0193-x.

DeGroot, J.M., Ledbetter, A.M., Mao, Y., Mazer, J.P., Meyer, K.R., & Swafford, B. (2011). Attitudes Toward Online Social Connection and Self Disclosure as Predictors of Facebook Communication and Relational Closeness. *Communication Research,* 38(1), 27-53. doi: 10.1177/0093650210365537

"Computers Are Learning to Smell" Wong, Matteo; *The Atlantic*, Oct. 13, 2023

"Can Artificial Intelligence Truly Detect Smell?" Mariyam, Hasna; *Medium*, Nov. 23, 2023

"Giving Computers a Sense of Smell: The Quest to Scientifically Map Odors." Miles, Ned Carter; *The Observer*, Oct. 28, 2023

"AI is cracking a hard problem- giving computers a sense of smell." *The Conversation*, May 30,2024.

"How TVs of the Future will Once Again Become the Heart of the Home" Govil, Shalin., *Variety,* March 13, 2025.

"The Ultimate Evolution of AI Companions in Gaming and…" *Covai*, May 22, 2024, The Ultimate Evolution of AI Companions in Gaming and Beyond | Convai

"Senior Talk- The Benefits of Conversational AI for the Elderly." *Senior talk*, blog, https://www.senior-talk.com/blog/the-benefits-of-conversational-ai-for-theelderly#:~:text=ElliQ%20is%20a%20social%20robot%20designed%20to,to%20keep%20them%20physically%2

"What are AI Companions?" Lyons-Cunha, Jenny, *built in*, Dec. 19, 2024

"AI Hyperrealism: Why AI Faces Are Perceived as More Real Than Human Ones" Miller, Elizabeth J., Steeard, Ben A., Witkower, Zak, Sutherland, Clare A.M., Krumhuber, Eva G., and Dawel, Amy. *Association For Psychologial Science. Vol 34(12) 1390-1403 April 25, 2023*

"What are AI Companions? Benefits & Use Cases"" *D-iD*

"ChatGpt Security Risks: All You Need to Know." *SentinelOne, May 26, 2025*

"ChatGPT in the Organization: Top Security Risks and Mitigations" *exabeam 2025*

Realbotix https://www.realbotix.com

"The Orica of AI" CBS 60 Minutes Interview Jan. 13, 2019.

Edwards, Kelly. "The Importance of Touch in Relationships." Just Mind Counseling. Sept. 26, 2023

Chae, Christine. "Understanding the Science Behind Physical Touch and Mental Wellness." Abundance Therapy Center. Jan. 11, 2024.

"It's Not a Computer, It's a Companion" Moore, Justine; Kim, Bryan; Li, Yoko; & Casado, Martin. *Andreessen Horowitz.* June 22, 2023.

"Gender Bias in AI: Why Voice Assistants are Female." *Adapt Worldwide*, Fisher, Ella. June 7, 2021

"Siri, Alexa, ChatGpt. Why are all AI voices female" *Podcastle* Feb. 10, 2025

References

"The Impact of Technology on Child Sensory and Motor Development" Cris Rowan, 5/29/2013

"Technology's Impact on Child Growth and Development." David Elkind, 9/22/203

"How Technology is Changing the Way Children Think and Focus." Jim Taylor, Psychology Today 12/04/12

"Why Your Sense of Smell is Important to Your Health." UCLA Health

"Love Stinks: The Association between Body Odors and Romantic Relationships." Nov. 17, 2021, National Institute of Health

"The Importance of Scent in Relationships- Good Clean Love" July 23, 2024, Good Clean Love

"Why Disliking a Partner's Smell Could End a Relationship." Apr. 20, 2024 Psychology Today

"Olfactory Impairment and Close Social Relationships: A Narrative Review" Aug. 5, 2024, Blomkvist, Anna, Hofum, Marlise, Oxford Academic

Photos by Shutterstock, Global, Adobe stock, Getty Images, iStock, Research Gate, Texas State University, Dreamstime, Wikipedia, and Unsplash et al.

"Proceed with Caution: The use of AI in psychotherapy." *The Psychological Practice* , Oct. 30, 2024

"AI in therapy? Here's what people think about it- according to research" *Upheal*, on line Nov. 1, 2024

"4 Tips for a Meaningful Relationship." *PsychCentral*, Reviewed by Litner, Jennifer, PhD, LMFT, CST; written by Patterson, Chantelle. July 19, 2022

"Types of AI algorithms and how they work.." Kerner, Sean Michael; Tabsharani, Fred. *TechTarget Network*, Oct. 16, 2024

"The ever-changing roles of serotonin" Jones, Lauren a., Sun, Emily w., Martin, Alyce M., Keating, Damien J., *ScienceDirect*, Vol. 125, Aug. 2020.

"AI system resorts to blackmail if told it will be removed." *BBC News*, Liv McMahen, May 23, 2025.

"DeepSeek: The Chinese AI app that has the world talking." Ng, Kelly; Drenon, Brandon; Gerken, Tom; Cieslak, Marc. *BBC* Feb. 4, 2025

"Tennessee Attorney General Skrmetti Joins Coalition Urging Meta to Protect Kids from AI Sexual Exploitation." Office of TN Attorney General, May 28, 2025

"Attorney General Raul Torrez Files Lawsuit Against Meta Platform, and Mark Zuckerberg to Protect Children from Sexual Abuse and Human Trafficking." New Mexico Department of Justice. Dec. 6, 2023

https://www.roboticsacademy.au>history-of-robots

"Robotics: A Brief History" Brady, Mike. Sanford Computer Science, Sanford University

"MIT Teaches Robots to 'feel' Objects just by Looking at Them." *CNN News*, Williams, David, June 17, 2019.

"Teaching Artificial Intelligence to connect senses like vision and touch" *MIT News*, Gordon, Rachel. June 17, 2019.

References

Zara, Jethani, "The Neuroscience of Love and Connection." Pacific Neuroscience Institute. Feb. 5, 2025.

Wright, Paul. M.D. "What happens in your brain when you experience love?" Nuvance Health. Feb. 4, 2025.

Novotney, Amy, "What happens in your brain when you're in love?" American Psychological Association. Feb. 10, 2023

Perera, Ayesh. "Uncanny Valley: Example, Effects, & Theory- Simply Psychology". *Simply Psychology*. Oct. 10, 2023.

McCoy, Julia. "This Robot has Living Muscles that Move Like Humans/Meet Clone Alpha." YoutTube, Dec. 14, 2024.

"Humans & Quadruped Robots: Robots Knowledgebase- Clone Alpha." *Looking Glass XR*, Jan. 3, 2025.

"Family sues OpenAI over son's suicide" NBC Nightly News. Aug. 26, 2025.

Alkahtani, H., Aldhyani, T. H., & Alqarni, A. A. (2024). Artificial intelligence models to predict disability for mental health disorders. *Journal of Disability Research*, *3*(3)

Tutun, S., Johnson, M. E., Ahmed, A., Albizri, A., Irgil, S., Yesilkaya, I., Ucar, E. N., Sengun, T., & Harfouche, A. (2023). An AI-based decision support system for predicting mental health disorders. *Information Systems Frontiers*, *25*(3), 1261–1276.

Li, H., Zhang, R., Lee, Y.-C., Kraut, R. E., & Mohr, D. C. (2023). Systematic review and meta-analysis of AI-based conversational agents for promoting mental health and wellbeing. *NPJ Digital Medicine*, *6*(1), 236–236.

Minerva, F., & Giubilini, A. (2023). Is AI the future of mental healthcare? *Topoi*, *42*(3), 809–817.

"What are Autonomous Robots- An Overview." *Universal Robots*. May 13, 2019.

Tilley, J. (2017, September 7), Automation, Robotics, And The Factory Of The Future, McKinsey & Company, pp. 1-6. Retrieved from https://www.mckinsey.com/business-functions/operations/our-insights/automation-robotics-and-the-factory-of-the-future

"Can AI Read our Minds? A Look at the Reality of Mind Reading Technology." *Vanishing Inc*. 2025.

"Artificial intelligence and adolescent well-being- an APA health advisory!" American Psychological Association, June 2025

Harris, K. R. (2021). Video on demand: What deepfakes do and how they harm. Synthese, 199, 13373–13391. https://doi.org/10.1007/s11229-021-03379-y

Thiel, D., Stroebel, M., & Portnoff, R. (2023). Generative ML and CSAM: Implications and mitigations. Stanford Digital Repository. Available at https://purl.stanford.edu/jv206yg3793. https://doi.org/10.25740/jv206yg3793

Christensen, L. S., Moritz, D., & Pearson, A. (2021). Psychological perspectives of virtual child sexual abuse material. Sexuality & Culture, 25, 1353–1365. https://doi.org/10.1007/s12119-021-09820-1

OECD. (2021). Children in the digital environment: Revised typology of risks. OECD Digital Economy Papers, (302). https://www.oecd-ilibrary.org/science-and-technology/children-in-the-digital-environment_9b8f222e-en

Lobe, B., Velicu, A., Staksrud, E., Chaudron, S., & Di Gioia, R. (2021). How children (10–18) experienced online risks during the Covid-19 lockdown—Spring 2020: Key findings from surveying families in 11 European countries. Publications Office of the European Union. https://doi.org/10.2760/562534

"What is generative AI?" IBM Research, Apr. 20, 2023

Mercier, Sara. "Building an Artificial Intelligence (AI) Companion." *build capable*. Feb. 14, 2024.

"How to Protect Yourself Against Deepfakes" Online Safety and Privacy, National Cybersecurity Alliance. Dev. 22, 2023.

"How to Explain AI to kids by age group (2026)" *Chitti Blog* Jan. 6, 2026.

Watson, Angela. "What students need to know about artificial intelligence (and how to help them learn it)" *truth for teachers*. Oct. 27, 2024.